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12. **Phalacrocorax pelagicus pelagicus**. Pelagic Cormorant. This species is fairly common along the shores of Forrester Island and to a less extent occurs on both Lawrie and South islands. Nest building commenced during the first week in June and eggs were in evidence by the 26th. Young birds were in the nests twenty-four days later though it is possible that the period of incubation is somewhat shorter than this. Several times at sea these birds were seen feeding on herring.

*Stanford University, California, October 23, 1914.*

## BIRDS OF THE BOSTON MOUNTAINS, ARKANSAS

By AUSTIN PAUL SMITH

THE FOLLOWING list consists of birds that were met with by the writer during an eighteen months residence in the region; or of species reported to him as occurring within the area hereafter specified.

The Boston Mountains comprise a range of rough hills covering the greater part of several counties in northwestern Arkansas and extending for a short distance into Oklahoma. Essentially a part of the Ozark plateau, this group constitutes the highest land within the state, with exception of a few isolated peaks of the Ouachita Mountains, that lie south of the Arkansas River. The Boston Mountains reach an altitude of 2200 feet, in the vicinity of Winslow, Arkansas.

At least ninety percent of the area of these hills is forested; but much of it is second growth timber. Such as remains of the primitive forest is largely confined to ravines and rough hillsides; but, wherever found, it contains most of the species of deciduous arborescent growth, general to the Carolinian zone within the Mississippi watershed. On areas that have been "cut-over", and allowed to revert to forest, the principal trees are oaks of several species, including *Quercus velutina*, *alba*, *rubra*, and *coccinea*; hickory, mostly *H. glabra*; chinquapin (*Castanea pumila*); sour gum (*Nyssa sylvatica*); and persimmon (*Diospyros virginica*). Wherever clearings have been made and abandoned, a vigorous growth of sassafras now exists. Sweet gum (*Liquidamber styraciflua*), sycamore (*Platanus occidentalis*), and elm (*Ulmus americana*) are usually found in the immediate vicinity of streams. The undergrowth of the larger ravines is largely, often entirely, composed of indian currant (*Symphoricarpos vulgaris*).

The geographical area of this article is confined to a radius of ten miles of Winslow, and within the limits of Washington county, unless otherwise stated; also at an altitude of 1800 feet, or over.

I have found A. H. Howell's *Birds of Arkansas* (Biological Survey, Bulletin no. 38) of great assistance in preparing this list, it being the only publication that has yet appeared relative to the avifauna of that state. Acknowledgment is also due the Bureau of Biological Survey for the identification of several of the forms included herewith.

**Anas platyrhynchos**. Mallard. A flock of eight birds, closely bunched, and not more than fifty feet overhead, passed November 23, 1913. In 1914, three birds were noted as early as September 1.

***Branta canadensis canadensis*.** Canada Goose. A flock of about forty birds, headed due south, was seen on October 11, 1913. The vernal transit in 1914 covered a rather extended period, flocks being observed from March 16 to April 15. All passed flying very low, which seemed to be a general rule with migrating birds crossing the range.

***Olor columbianus*.** Whistling Swan. A solitary bird killed during the winter of 1912-13 on Frog Creek, near Porter, Crawford county, was probably of this species.

***Herodias egretta*.** Egret. A large white "crane" was frequently observed by hunters along Frog Creek, during the summer of 1912; but it is not known to have been killed.

***Butorides virescens virescens*.** Green Heron. A rather common summer visitant in suitable situations about the base of the mountains, but it is only occasionally found above 1800 feet.

***Fulica americana*.** Coot. About sundown, October 11, 1913, a large bird was seen to alight in a field, and to then run rapidly through the tall grass. On being secured, it proved to be a mudhen. The nearest pool or pond was at least eight miles distant.

***Oxyechus vociferus vociferus*.** Killdeer. The region is poorly suited to this species. Several birds, identified by their call, were seen flying overhead March 25, 1914, and again on the following day.

***Colinus virginianus virginianus*.** Bobwhite. Resident, but in the higher part of the range of very localized distribution. The only covey that I could discover, made its headquarters in a 25-acre apple orchard on the farm where I resided. Here they found a bountiful food supply, with few enemies. However, their numbers seemed to remain stationary during my stay. They were very fond of the seed of green foxtail grass (*Setaria viridis*) which grew abundantly in the orchard; and of the berries of the sour gum, growing nearby. These constituted the principal items of the fall food supply. The last brood appeared about September 1, and after that date their note was rarely heard.

***Meleagris gallopavo silvestris*.** Wild Turkey. A very few yet linger in the more inaccessible ravines; but the only definite record I could secure during my stay, was of a flock of five seen by a farmer near Frog Creek, in Crawford county, in the early part of December, 1913.

***Zenaidura macroura marginella*.** Western Mourning Dove. Occasionally seen during the spring and summer months, or from April 1 to August 28. Only once were as many as five birds noted in company, single individuals being the rule.

***Cathartes aura septentrionalis*.** Turkey Vulture. Present most of the year, retiring about December 1, to below 1500 feet; but reascending toward the end of February. A few could be noted almost daily; but to find any number in company, was unusual.

***Elanoides forficatus*.** Swallow-tailed Kite. No doubt this bird formerly was a common transient; but during the last few years it has been seldom seen. The only record that I can recall during my stay in the mountains, was that of a single bird, observed by a farmer near Winslow, on October 8, 1913. Old residents were well acquainted with it, and described it to me minutely. They spoke of often seeing several birds together, which they took to be the female adult teaching her young the aerial manoeuvres for which this species is famed.

**Circus hudsonius.** Marsh Hawk. On the top of one of the highest hills of the range there was a clearing of about fifteen acres surrounded by timber. It was over this field that most of the individuals recorded were seen. Appearing in fall by October 7, departing before the winter months began, they reappeared in spring as early as March 10.

**Accipiter velox.** Sharp-shinned Hawk. Not as numerous as at lower altitudes. Seemed to occur only as a transient, although a single bird was seen July 24, 1913. April and October were the months in which nearly every record was made. In the last named month they appeared by the 2nd.

**Accipiter cooperi.** Cooper Hawk. A fairly common resident; most numerous during the warmer months. The proximity of the forest about nearly every farmhouse insures a great degree of immunity to this hawk in its frequent raids on poultry. The drought during the summer of 1914 caused most of the mountain streams to dry up. Along the course of one of these brooklets I flushed, on several occasions, this hawk in the act of feeding upon minnows in the desiccating pools.

**Buteo borealis borealis.** Red-tailed Hawk. Occurring principally as a fall and winter visitant. After November 15, and throughout the winter months, it proved to be the commonest hawk. It is my opinion that, although a larger bird than the Red-shouldered, it does not as a rule soar as high in hunting. An adult bird taken January 3 proved typical of this form.

**Buteo lineatus lineatus.** Red-shouldered Hawk. Although Howell states (*Birds of Arkansas*), that he did not meet with this species in the mountainous sections of the state, I found it to be the most abundant, and, with the Cooper, the only common hawk during the warmer months. It apparently does not winter, at least near the top of the range, as I found none after November. In spring it appeared during the first week in April. Fully grown young were on the wing June 30.

**Buteo swainsoni.** Swainson Hawk. An adult of this species alighted in a tree not more than 35 feet overhead, in a woodland through which I was walking, October 1, 1914, allowing of a close although brief scrutiny of a bird that I have been long acquainted with in the western states. Unfortunately, before I could swing my gun into position, it had flown away. It is, I believe, the first record for Arkansas.

**Buteo platypterus platypterus.** Broad-winged Hawk. While I found this hawk only as a transient, it may occur as a summer resident, as it has been reported at that season from several localities within the state. I found it fairly common during May, and again in September; in the latter month it appeared by the 17th. I found it only in heavy timber, usually perched on dead top-limbs of large forest trees. All specimens taken had the stomachs empty.

**Aquila chrysaetos.** Golden Eagle. The first "norther" in the fall of 1913 arrived October 18, bringing with it snow and freezing temperature. On the following day a farmer living about four miles south of Winslow saw a goose belonging to him attacked and killed by a great bird, which he was able to frighten away before it began to devour its quarry. The man surmised that the bird would return, and set a steel trap nearby, baited with the goose. And, sure enough, on reaching his barnyard next morning he found the bird entrapped, although held only by a single toe. This individual came into my possession and proved to be a nearly adult Golden Eagle. It constitutes the first definite record for the state.

**Haliaeetus leucocephalus leucocephalus.** Bald Eagle. Many reports of eagles seen, came to me during my stay, and I, myself, observed it twice—on May 6, and September 29, 1914, in both instances adults soaring overhead. The bird seen on the first date was being vigorously attacked by a Red-shouldered Hawk, though this appeared to cause little worry to "our emblem".

**Falco columbarius columbarius.** Pigeon Hawk. Rarely noted; the only definite date I can give was of an individual seen flying low over a field, September 22, 1913.

**Falco sparverius sparverius.** Sparrow Hawk. Has been reported as a common resident from many localities in the state. Nevertheless, I rarely found it within the area of which I treat. Seen several times during May and June, 1913; again in January and August, 1914.

**Strix varia varia.** Barred Owl. While frequently heard, it was seldom seen. An adult shot January 10, 1914, as it flew from a hollow stub, proves to be typical of the northern form, being of large size, and with the feathering on the tarsi extending almost to the toes. It definitely proves the extension of the range of this form into the northern part of the state.

**Otus asio asio.** Screech Owl. This bird, termed "Scritch Owl", or simply "Scritch", by the mountaineers, did not appear to be as numerous as either of its larger relatives, if one be allowed to estimate numbers chiefly by ear. As often heard at the very top of the range, as elsewhere.

**Bubo virginianus virginianus.** Great Horned Owl. Among the shelving rock slopes of the deeper ravines, dwell in abundance wood-rats (*Neotoma*). It is in the vicinity of these ravines that most of the Horned Owls of the mountains were to be found, as they preyed largely on this rodent. I considered it to be the commonest owl.

**Coccyzus americanus americanus.** Yellow-billed Cuckoo. Common spring and summer visitant; well distributed, and found to the summit of the highest hills. Arriving early in May (May 2, 1914), the southward movement began as early as September 1, but immature birds lingered until October 2. The year 1914 was a locust (*Cicada septendecim*) year in the region, and during the period these insects were present, they formed the principal food item of this bird.

**Coccyzus erythrophthalmus.** Black-billed Cuckoo. I doubt whether the species breeds in the mountains. Two were found May 22, 1914, among dense growth margining a stream; and an immature bird was taken September 17, of the same year, on the top of one of the highest hills of the range. These records would suggest its occurrence as a transient only.

**Ceryle alcyon alcyon.** Belted Kingfisher. Few of the streams heading in these hills attain sufficient volume above 1800 feet, to persist through the dry spells, so kingfishers seldom seek them. Twice only did I find it: once on September 23, 1914; again next day, but along a different stream.

**Dryobates villosus villosus.** Hairy Woodpecker. About as numerous as the Downy; possibly more frequently seen during cold weather than at other times. All birds examined by the Biological Survey were returned labeled *villosus*, although this must be near to the southern limit of its breeding range within the state.

**Dryobates pubescens medianus.** Downy Woodpecker. This proved to be the form found breeding. Abundant throughout the year. During the summer of 1913 an individual was observed frequenting a sweet-corn patch for several

successive days, hunting up and down the rows with regularity and searching the ears for the corn-maggot, so destructive at that time.

**Sphyrapicus varius varius.** Yellow-bellied Sapsucker. Arrived about the last week in October, and during the balance of the year was fairly common. They consumed quantities of dogwood (*Cynoxylon floridus*) berries in that period. Immature birds were found to outnumber the adults ten to one. Some of the call notes of the sapsucker much resemble those of various hawks.

**Phloeotomus pileatus pileatus.** Pileated Woodpecker. A characteristic bird of the region. Fairly common resident, except during the winter months when the majority seek lower altitudes. As few of the clearings in these mountains were of large extent, and heavy timber nearly always at hand, the birds were frequently seen to venture out into a field to feed upon ants and other insects harbored in decaying stumps. Normally rather difficult of approach, I have at times been within a few dozen feet of them. On one occasion firing several times into a tree to secure some small birds, I was surprised a little later to find that a Pileated had been clinging to the trunk during the entire bombardment. Examples sent to the Biological survey proved that the southern form extends into the hill country.

**Melanerpes erythrocephalus.** Red-headed Woodpecker. This bird does not seem to breed in the higher parts of the range; indeed it was present all told, not over two months in the year. About the last week in April small numbers were observed, mostly in flight. Again about the first of September it arrived, and was abundant for a month or six weeks, during which period it kept largely to oak woodland, feeding much on acorns and chinquapins. At least 80 percent of the birds seen during the autumn sojourn were immatures.

**Centurus carolinus.** Red-bellied Woodpecker. A resident, uncommon in the spring and early summer; fairly numerous during the balance of the year. Birds of the year, beginning to acquire the red nuchal feathers, were noted July 25.

**Colaptes auratus luteus.** Northern Flicker. Another species, normally within its breeding range, that was not seen during the spring and early summer. In the fall it appeared suddenly in flocks after the middle of September; and during the following two months great numbers ranged through the woodlands. Most of their number withdrew in December. The few that wintered kept closely to the deeper ravines, where they were assured of a plentiful supply of dogwood berries.

**Antrostomus vociferus vociferus.** Whippoorwill. Arrived after the middle of May (May 21, 1914), and was occasionally heard for a month or so thereafter.

**Chordeiles virginianus virginianus.** Nighthawk. Much more numerous than the preceding. Arrived about April 28, remaining until late into September. The southward movement, however, was apparent at a much earlier date, migrants from the north appearing in large flocks in August.

**Chaetura pelagica.** Chimney Swift. The earliest arrivals were recorded April 17. It was found to be a common summer visitant, remaining until October 3, or later.

**Archilochus colubris.** Ruby-throated Hummingbird. The arrival of the "ruby-throat" and the blossoming of the dwarf buckeye (*Aesculus parviflora*) were found to be coincident. For it is upon the flowers of this shrub that the ruby-throat finds most of its subsistence for the first two weeks after arrival.

Thereafter there were flowers of many kinds in abundance. In the early days of summer the beautiful *Pentstemon tubiflorus* comes into flower, and although pure white, proved a great attraction to the hummingbird. As midsummer arrived and flowering plants grew scarce, the hummingbirds resorted to the heavier woodland, hunting among the leaves, and, if I am not mistaken, feeding often on the honeydew. A female was noted on June 13, putting the finishing touches to her nest. The species does not depart until the first week in October.

**Tyrannus tyrannus.** Kingbird. Entirely a transient, as considered within the scope of this article. Several were seen May 13, 1914; and on August 22, 1913, I found three birds in heavy woodland.

**Myiarchus crinitus.** Crested Flycatcher. Not more than three or four pairs were noted during either of the two years spent in the region. It is one of the species that is rather tardy in completing the moult, specimens taken as late as August 28, or just before their departure southward, being in a very ragged state. Arrived April 30, in 1914.

**Sayornis phoebe.** Phoebe. Present most of the year; or from March 16, to November 12, inclusive. During the nesting period it was of course confined to the vicinity of streams; otherwise of general dispersion. Nest-building well advanced by March 31.

**Nuttallornis borealis.** Olive-sided Flycatcher. Found to be a regular, although rather uncommon, transient. Four were noted perched in high trees bordering a stream, May 16, 1914; a week later a flock of five was observed. A single bird was seen August 25, 1913. In 1914 a southbound individual was found September 18, as a companion of a Pewee, perching on the dead top of a tall forest tree.

**Myiochanes virens.** Wood Pewee. Every few acres of woodland was inhabited by either a pair of pewees, or of Acadian Flycatchers. The pewees were partial to the dry hillsides, while the latter were mostly restricted to densely wooded draws, or to streamsides, their ranges rarely overlapping during the period of nesting activity. In 1914 the Pewee arrived April 29, and remained until September 29. A bird of the year taken on the last named date still retained some of the juvenile feathering on the crown. An extensive flight of this species occurred September 18, 1914, single trees with a dozen or more birds perched on them, were observed during the early morning hours.

**Empidonax flaviventris.** Yellow-bellied Flycatcher. A regular transient, passing through in spring after the middle of May (16th to 22nd, in 1914). The southward movement extended from September 1 to the 23rd. The birds were found in low undergrowth as well as among the foliage of the highest trees, but seldom ventured to the edges of clearings.

**Empidonax virescens.** Acadian Flycatcher. The commonest flycatcher during the period it was present, or from April 28 to September 1. Young just able to fly found August 19.

**Empidonax trailli trailli.** Traill Flycatcher. Although this form was first described from Arkansas, it is quite partial to the prairie or thinly timbered sections, rarely venturing into timbered mountain country. I met with it twice, on both occasions along the same stream. On May 22, 1914, one was shot as it alighted on a small bush, in a field. Again found on June 9, feeding about the catkins of a late flowering willow. Neither individual, upon dissection, showed evidence of breeding.

**Empidonax minimus.** Least Flycatcher. Notwithstanding that no previously published record for this species has existed for the state, it occurred very commonly in migration during my stay. The vernal transit was covered between May 5 and 11. On its return southward I found it present from September 8 to 16. Brushy edges of clearings and orchards were where it was usually to be found.

**Cyanocitta cristata cristata.** Blue Jay. Really abundant during late summer and early fall. Toward the end of October the Blue Jay suddenly disappeared so that after the first of November, and until well into March, not a single bird could be found. A comparatively limited number were present during the nesting season. They were observed to gather into large flocks when preparing for departure to lower altitudes.

**Corvus brachyrhynchos brachyrhynchos.** Crow. A few crows could be seen on nearly any day through the year, but never were observed to assemble into large flocks. It is the northern form that occupies the Ozark plateau.

**Molothrus ater ater.** Cowbird. Straggling flocks of this species passed over the range during several days in November, 1913; a lone bird was seen December 8, 1913. In 1914 it reappeared March 22, flocks passing for a week or more. No cowbirds were otherwise observed; nor did I ever find its eggs in nests of various small species of birds examined.

**Agelaius phoeniceus phoeniceus.** Red-winged Blackbird. A single bird flushed from a copse, November 28, 1914, but not secured, was the only instance that I can recall near the top of the range. It is possible that this individual belonged to variety *fortis*.

**Sturnella magna magna.** Meadowlark. A typical adult of this form was shot as it perched on a stump in a clearing at the very top of the range, March 27, 1914. The region is not at all suited to the genus. Otherwise both *magna* and *neglecta* might be expected.

**Icterus spurius.** Orchard Oriole. Reached the region as early as May 3; but only a small proportion remained to breed. The few that did so were not conspicuous except during the period when the chinquapin was in bloom, after the middle of June. The flowering aments of this tree are very fragrant and contain much nectar, and are resorted to by innumerable small insects; these latter attracted the Oriole.

**Icterus galbula.** Baltimore Oriole. Not known to have nested in the mountains; and apparently uncommon even as a transient. On April 29, 1914, a flock of eight or nine birds alighted for a few minutes in trees near the house where I resided.

**Quiscalus quiscula aeneus.** Bronzed Grackle. Common enough as a transient for the first ten days in November, and again from March 8 to April 24; but as it seldom alighted I found considerable difficulty in shooting the few examples obtained.

**Passer domesticus domesticus.** English Sparrow. A small number were ever present in the town of Winslow; but the species was of irregular occurrence elsewhere. Roving individuals, sometimes alone, often in small flocks, could sometimes be seen inspecting barns or outbuildings, even alighting and spending a few minutes in the yard, but eventually departing.

**Carpodacus purpureus purpureus.** Purple Finch. A common winter visitant; arrived by November 24, and remained until at least April 20. Until the winter was well advanced the flocks kept closely to the deeper ravines



where their food supply consisted largely of sour gum, dogwood and sumac berries. When these sources were exhausted, the birds joined with flocks of gold-finches in extracting the seed from the balls (peduncles) of sweet gum and sycamore. After the leaf buds of the ash and basswood began to swell the finches fed much on them up to the time of migration. The adult males left considerably earlier than the female and immature birds.

**Astragalinus tristis tristis.** Goldfinch. Abundant resident. While never seeming to lack a ready food supply, this varied much with the seasons. In the fall, favorite food items were seeds of catmint, burdock, ragweed, etc.; in winter, seeds of sweet gum and sycamore; in spring, the unripe seeds of various plants. The bird is particularly fond of seeds of Compositae that ripen in early summer. Most of the males in the region had acquired the nuptial plumage by April 20.

**Spinus pinus.** Pine Siskin. On March 25, 1914, four were observed to alight in an apple tree in the yard at the farm where I stayed. A single bird was seen the following day feeding on the ground nearby.

**Poocetes gramineus gramineus.** Vesper Sparrow. A migratory "wave" of sparrows reached the mountains on March 25, 1914; and on that date, I noted perhaps twenty-five Vesper Sparrows in a large apple orchard. Some of these birds were singing vigorously. They remained for about two weeks.

**Passerculus sandwichensis savanna.** Savannah Sparrow. Several birds were observed on April 6, 1914, in company with the preceding, and in the same orchard. One of the birds was singing sweetly.

**Ammodramus bairdi.** Baird Sparrow. On March 23, 1914, while walking through the orchard previously referred to, a sparrow was noted in a flock of snowbirds feeding in the grass. On my approach the juncos flew away, but the sparrow alighted in a nearby tree, where it was shot. Examination proved it to be as above, and a new addition to the state list. Several of the toes on one of the feet of this individual were malformed.

**Ammodramus savannarum australis.** Grasshopper Sparrow. One bird collected April 4, 1914, from the grass in the orchard referred to. This constitutes the sum total of my knowledge of this sparrow in the region. There are few published records for it in Arkansas.

**Passerherbulus lecontei.** Leconte Sparrow. Previous observers have recorded this sparrow from Fayetteville and Van Buren, and as Winslow lies in an almost direct line between these localities, it was not surprising to find it there, although I believe that this is the highest altitude (2100 feet) yet accorded to the species. On November 29, 1913, while making my way through a bramble patch, a bird arose from almost under my feet, and alighted a few yards away, when I was able to flush and secure it. The species was not again met with until May 11, 1914, when a bird that I could not readily identify was heard to utter a series of sharp notes from among a clump of indian currant. It resisted my efforts to get a clear view of it, although it was continually moving. So it was necessary for me to shoot it in order to name it.

**Chondestes grammacus grammacus.** Lark Sparrow. A few days after my arrival in the region, or about April 23, 1914, happening to be standing near a spring in a partly wooded pasture, my attention was drawn to a bird walking slowly about on the ground near the edge of the water hole. It was easily identified as the above, and it did not attempt to fly during the few minutes I remained near the spot. This was at an altitude of 2100 feet.

**Zonotrichia querula.** Harris Sparrow. Recorded as an irregular transient. Several birds were seen during the first week of May, 1913. These kept closely to brier tangles growing along a rivulet in an old orchard, and shunned the company of other sparrows. On October 24, 1913, perhaps six or eight individuals came under my notice during a morning tramp, and constituted a fractional part of the motley assemblage of sparrows observed that day.

**Zonotrichia leucophrys leucophrys.** White-crowned Sparrow. Large flocks were about during the first half of May, 1913, when they spread alike over field and woodland. In 1914 but two birds were noted, these appearing on May 6. None were found during fall or winter.

**Zonotrichia albicollis.** White-throated Sparrow. The advance-guard arrived on October 24, in 1913, and within a few days, and for a month or more thereafter, outnumbered all other species of birds combined. Perhaps five percent remained through the winter. Reappeared in force in early March; it soon began to molt into the pre-nuptial plumage which was, as a rule, fully acquired before the final departure May 6. Became very secretive toward the end of its stay.

**Spizella monticola monticola.** Tree Sparrow. A mixed flock of this species and snowbirds was found February 16, 1914, in an open woodland. Others were seen the following day. This was about the coldest period of the winter. Examples secured proved to be the eastern form, *monticola*.

**Spizella passerina passerina.** Chipping Sparrow. Wherever there was evidence, past or present, of human habitation in the mountains, the "chippy" was pretty sure to be present during most of the year, being absent only in January and February. Young of the first brood were found, able to fly, May 22; and parents were observed feeding young after nest construction for a later brood was in progress. Several pairs of this sparrow nested about the farmhouse where I lived. They certainly could be considered a potent factor in the success of the crops in the adjoining vegetable garden. Time and again I watched adults alone, or with young, work methodically up and down rows of vegetables, securing results at every few feet. Toward the end of summer, after the species had assembled into flocks to wander over more extensive areas, the garden growth showed plainly the lack of these feathered guardians.

**Spizella pusilla pusilla.** Field Sparrow. Resident, but the number present during the winter months is insignificant compared with the abundance during the other seasons of the year. A goodly percentage of birds was still showing molt in October. While the western form *arenacea* has occurred within the state, examples from this region covering the year prove to be *pusilla* alone.

**Junco hiemalis hiemalis.** Slate-colored Junco. A snowbird was detected among a flock of Field Sparrows, October 11, 1913, but it was nearly the end of the month before the species arrived in force. During the time of its presence here, it proved to be the same gentle and companionable bird as in its summer home. The last individuals departed April 18.

**Melospiza melodia melodia.** Song Sparrow. Did not arrive until freezing weather had been experienced. Its initial appearance was on October 23. After this date and throughout the winter, two or three birds might be found in a day's tramp, if diligently searched after; but even during the height of the spring migration this average could rarely be increased. Disappeared toward the end of April.

**Melospiza lincolni lincolni.** Lincoln Sparrow. Noting a rather large sparrow among a number of Field Sparrows, moving about in piles of brush in a clearing, I fired and picked up a Lincoln and an English Sparrow, as the result of one cartridge. This occurred on September 30, 1914. None was again seen.

**Melospiza georgiana.** Swamp Sparrow. All the individuals of this sparrow that came under my observation were found among clumps of underbrush growing in the bottoms of the wider ravines. Recorded as a spring transient only, and present from April 6 to May 10, 1914; at least four were seen on the last named date.

**Passerella iliaca iliaca.** Fox Sparrow. Was as plentiful in the region, during its season, as I have ever found the species in its various forms anywhere. Arrived by October 30, and remained throughout November and December. Reappeared March 5, and stayed through the month. Frequently consorted with Cardinals, as both species were partial to the same situations—thick brush edging clearings.

**Pipilo erythrophthalmus erythrophthalmus.** Towhee. Restricted in numbers at all times, and uncommon during the winter months. Nests with full complement of eggs observed during first week of May. Young of a later brood, just able to fly, July 24.

**Cardinalis cardinalis cardinalis.** Cardinal. While not as numerous in the hill country as in the lowlands of the state, still the Cardinal is one of the characteristic resident birds of the region. The males were in the full glory of their nuptial song by the end of February, although nest-building did not begin for a month later.

**Zamelodia ludoviciana.** Rose-breasted Grosbeak. The fewness of records for this species in Arkansas is undoubtedly due to a paucity of observers, and not to rarity of the bird. I found it to be very common in heavy woodland, between April 25 and May 15. It was very quiet while present, uttering only an occasional "clink". On one occasion I found a pair of these Grosbeaks and several Cardinals together feeding upon the ground in the forest in perfect comity.

**Passerina cyanea.** Indigo Bunting. Few birds were as numerous during the warm months as this species. It arrived by April 25, and did not depart until the 15th of October or later. The young were first seen on the wing July 19. About the first of September they congregated in large flocks in brush and low growth.

**Piranga erythromelas.** Scarlet Tanager. While this and the following are common spring and summer visitants, the present species is less conspicuous, due to the fact that except for a short period after arrival it keeps closely to the heavily forested ravines and hillsides with northern exposure. Males arrived April 20, females a few days later. Date of departure, about September 1.

**Piranga rubra rubra.** Summer Tanager. This handsome bird was very common during the spring and summer of 1913, less so the following year. In 1913 it was first noted April 19, the next year not until May 2. It is pretty much confined to oak woodland during the nesting season. The males sang volubly until the end of July. The species molts very tardily; an adult taken October 3, had the tail and many of the quill feathers but half grown.

**Progne subis subis.** Purple Martin. Martin houses are quite general

about homesteads in the mountains; yet there is little doubt that a considerable number yet nest in hollow limbs or tree trunks. The earliest date of arrival was March 26; none were seen after September 28. Young were on the wing by July 18.

**Petrochelidon lunifrons lunifrons.** Cliff Swallow. A small flock was seen near the end of April, 1913, circling about over an orchard.

**Iridoprocne bicolor.** Tree Swallow. Observed on the following dates only: a flock of five October 3, 1913; the next spring, a pair on April 20.

**Bombycilla cedrorum.** Cedar Waxwing. This species has been reported to breed in northern Arkansas; but I was unable to find it nesting, or even to see any birds during June, July and August. I began to notice large flocks as September advanced; and from then until cold weather set in, they were much in evidence. Cedarbirds are very fond of pokeberries, and many of the birds had the plumage stained in great or lesser degree with the juice of the berry. The chin and throat feathers are evidently the last part of the plumage of the Waxwing to be acquired after molting. Such examples as were taken during September and October, all had these parts scantily feathered, or with the new feathers yet in the sheaths.

**Lanius ludovicianus migrans.** Migrant Shrike. I came upon a shrike May 27, 1914, as it was catching some large insect upon the ground in an open woodland. It was rather shy, and I was unable to obtain it; which is somewhat regrettable seeing that it was the only time I met with the species in the mountains. However, examples examined by the Biological Survey, secured by various collectors from many parts of the state, including the lowlands, were determined as *migrans*. So under that form I list it.

**Vireosylva olivacea.** Red-eyed Vireo. By far the most abundant member of the group found in these mountains, and the commonest arboricole bird during late spring and early summer. Arriving by April 16, nest building was soon in progress, and almost completed structures were found May 8. Returned southward after the middle of September, the last loiterers being seen on the 22nd.

**Vireosylva philadelphia.** Philadelphia Vireo. Four species of vireo in considerable numbers were observed in a single tree at the same time, on April 30, 1914. Three or four of these individuals were *philadelphia*. They were actively hunting through the topmost foliage of the tree along with a greater number of *flavifrons*; while in the lower foliage foraged *olivacea* and *griseus*. An addition to the state list.

**Vireosylva gilva gilva.** Warbling Vireo. While previous knowledge of the distribution of this vireo within the state during the nesting period was limited to the immediate vicinity of the Mississippi river, it must in reality occur at that time over most of the state, as I found it throughout the summer months to the very top of the range. However, it was much more abundant in migration, especially during the autumnal transit. The extreme dates for arrival and departure were April 27 and September 9.

**Lanivireo flavifrons.** Yellow-throated Vireo. This species and the Cerulean Warbler arrived within a few days of each other; each was partial to the same character of woodland, and both haunted the top-most foliage of trees. The Yellow-throated Vireo was common almost immediately after its initial appearance, which was as early as April 18; nidification proceeded at once,

and at least two broods were raised in a season. Last seen September 16, at which date the post-nuptial molt had been completed.

**Lanivireo solitarius solitarius.** Blue-headed Vireo. Found during the autumnal transit only. It arrived within a few days of the same date during the two years spent in the region. The period it was present was included between the dates September 28 and October 5. I do not recall ever having heard it utter even a call-note, and naturally such an unobtrusive bird was easily overlooked. It was seldom found elsewhere than at the edge of woodland, or in orchards, usually bringing up at the rear of a composite flock of small birds ranging about at that season.

**Vireo griseus griseus.** White-eyed Vireo. Wherever clearings had been made and then allowed to become partially overgrown with blackberry and greenbrier, a pair or more of White-eyes were pretty sure to be found domiciled during the warm months. Even the laggards had arrived by April 15, and from that date until the time of departure, September 21, there were few days that I failed to hear its cheerful notes. The latter half of July was the period of heaviest molt; by September 1 the new plumage had been acquired.

**Mniotilta varia.** Black-and-White Warbler. This was the first warbler to appear in spring. It arrived while the forest was yet devoid of foliage; but several species of trees were flowering, notably *Prunus injuncunda*, and on the insects drawn to the bloom of this tree, it fed largely for a few days. Partial to varied situations, hills and ravines. Present from March 30 to October 17 inclusive.

**Helmitheros vermivorus.** Worm-eating Warbler. As far as I could discover this species was restricted, within my sphere of observation, to bottom and slopes of a single ravine, where three or four pairs nested during 1914. It was first seen on April 22, hunting through foliage of indian currant; and it is worthy of mention that although considered a ground-loving species, I never actually found an individual in that situation. No molting birds were observed. Date of departure, September 14, or thereafter.

**Vermivora bachmani.** Bachman Warbler. The continued effort of some bird with notes much resembling those of *V. luciae* of the southwest, issuing from among the foliage of a large sweet gum, drew my attention while walking in a ravine bottom, May 5, 1914. It was some moments before I could obtain a good view of this bird, as, although singing constantly, it was continually moving about. When finally secured it proved to be an adult in somewhat worn plumage. Previous records for this warbler within the state were confined to the lowlands in the vicinity of the Mississippi River, and never, I believe, at this altitude (2000 feet) elsewhere. The brook along which it was found is a small head-stream of Lee's Creek, which in turn, flows into the Arkansas River; and this was perhaps the route followed by this individual in reaching the mountains.

**Vermivora pinus.** Blue-winged Warbler. One of the commonest warblers of the spring migration, and a few remained throughout the summer. The first arrivals were recorded April 24. The sweet gum could be as appropriately associated with this species in the region, as *Dendroica d. albilora* with the sycamore elsewhere.

**Vermivora chrysoptera.** Golden-winged Warbler. The first and only record for the region as well as for the state is of a single bird found in a grove, mostly consisting of witch-hazel, in a ravine bottom, May 16, 1914.

**Vermivora ruficapilla ruficapilla.** Nashville Warbler. Found as a regular transient, but in limited numbers, both spring and fall. In the former season it was present during the latter half of April; the autumnal transit covered the month of September, after the 8th. It was several times heard to sing while here, and its notes were to my ear the strongest in volume of any member of the genus with which I am acquainted.

**Vermivora peregrina.** Tennessee Warbler. For several weeks after April 28, 1914, large numbers were observed in heavily timbered ravines where they frequented both undergrowth and tree-tops. Very few individuals were in full breeding plumage.

**Compsothlypis americana usneae.** Northern Parula Warbler. The most abundant warbler during migration, and plentiful during the summer months. However, the breeding birds are to be included under *ramalinae*, if that form be recognized. Present from April 6 to September 24, inclusive.

**Dendroica coronata.** Myrtle Warbler. This warbler, so generally distributed over the greater part of North America, was observed on but few occasions. In fact, several other species of the genus, familiar birds of the eastern states, were entirely missing here. Several Myrtle Warblers were distinguished among a flock made up of various species, October 28, 1913. Again seen April 29, 1914.

**Dendroica magnolia.** Magnolia Warbler. A single bird seen May 22, 1914, constitutes the only record I secured for the species. This individual was one of the last transients of that spring.

**Dendroica cerulea.** Cerulean Warbler. Was the only member of the genus to be found in numbers. Arriving by April 16, and before the trees were fully leaved out, it was readily detected as it moved about in the tops of the highest trees on heavily forested slopes and in ravines. Later as the foliage developed it was less apt to be observed, and after nidification began in early May grew very secretive. Left the region soon after the middle of August.

**Dendroica pensylvanica.** Chestnut-sided Warbler. Five were seen in trees fringing a stream on May 13, 1914; and a week later, a single bird was detected in a small oak, on a dry hillside.

**Dendroica striata.** Black-poll Warbler. Early in the morning of April 24, 1914, a nasty foggy day, a number of birds congregated in plum trees growing near the house where I lived. Among these, was a bird I could not identify in the poor light, and so I concluded to shoot it. It proved to be a female Black-poll, and a rather early arrival, judging from migration records at hand for the species in this latitude. It was not again met with until May 16.

**Dendroica dominica albilora.** Sycamore Warbler. I maintained a close watch for this species whenever I came into the vicinity of sycamore trees, and was finally rewarded in finding several individuals, in the company of Parula Warblers, September 16, 1914. The only bird taken had completed the post-nuptial molt.

**Dendroica virens.** Black-throated Green Warbler. Not observed during the spring of 1913. Individuals were seen on August 13 of that year, and thereafter for a month or more it was quite numerous. In 1914 it was detected on April 24 and May 19, and missed entirely during the autumnal transit. Found in all variety of woodland, when present at all.

**Dendroica vigorsii vigorsii.** Pine Warbler. Coniferous trees were en-

tirely missing, in the parts of the mountains covered by these notes; consequently the only time I met with this bird was during a migratory "wave", September 29, 1914, when two individuals in company with a dozen or more birds of several species alighted to feed among the trees of the grove through which I was passing. They were quickly distinguished by the characteristic notes, often uttered; whereas other species present were quite silent.

**Dendroica discolor.** Prairie Warbler. A common summer visitant, found to the summit of the range, if abandoned clearings, old orchards, and lumbered over areas were present. Arrived about April 28; sang constantly up to May 25; departed very early; none seen after July.

**Seiurus aurocapillus.** Ovenbird. Excepting for such areas as had been recently cut over, Ovenbirds were everywhere present as summer visitants wherever the forest remained. Reached the region by the middle of April, and did not depart until September 15.

**Seiurus noveboracensis notabilis.** Grinnell Water-Thrush. The other members of the genus had left when this species arrived. It was recorded September 18 and 21, 1914, a single bird being seen on each date.

**Seiurus motacilla.** Louisiana Water-Thrush. Common summer visitant; confined to the vicinity of the larger streamlets. While its alarm note was nearly always sounded before I could locate the bird, yet, after the nesting period had passed, it was much more easy to approach than before. Young, able to fly, were found June 4; later broods appeared up to the end of July. A few birds showed evidence of partial molt, even in April; by the 10th of July, practically all adults were in ragged plumage; but by the time of departure (after August 15), the new plumage was fully acquired.

**Oporornis formosus.** Kentucky Warbler. A favorite location for this attractive species was a shaded slope where numerous springs issued forth; it was also frequently found in low situations along streams. The earliest arrival was recorded April 22. Young were about June 6. Departs early; but a few birds lingered until September 7. One of the most confiding of small birds.

**Oporornis philadelphia.** Mourning Warbler. It is pretty certain that this is one of many species of migratory birds preferring to pass around, rather than over, the range. With habits and movements resembling the Hooded Warbler, it was difficult to distinguish between the two species in the dense underbrush shaded by forest trees. So, of the limited number venturing into the region, few were seen. But records are at hand showing its presence from the end of April, to as late as May 21.

**Geothlypis trichas trichas.** Maryland Yellowthroat. Howell writes of this as one of the commonest of small birds within the state; yet I rarely met with it in the higher parts of the range. Several were seen during late April, 1913; and one was secured from a brush pile in a pasture May 21, 1914.

**Icteria virens virens.** Yellow-breasted Chat. A well distributed summer visitant; found on the highest hills, if bramble patches existed. One of the later arrivals, none being noted before April 30; but the bulk of its number reached the mountains together. Young, fully feathered, seen July 18. Chats left for the south before September.

**Wilsonia citrina.** Hooded Warbler. Chooses rather drier woodlands than the Kentucky Warbler, but equally numerous, also arriving earlier and departing later. Extreme dates were April 18 and September 24. Males

reached the mountains a week or more ahead of the females; but nidification began as soon as the latter sex arrived, nests nearly completed being found May 5. The gray edging to the feathers of the black throat-patch of the adult male, was distinguishable by July 15.

**Wilsonia pusilla pusilla.** Wilson Warbler. An uncommon transient; occurred in the region May 8 to 13, and September 7, 1914; on all occasions found in dense undergrowth.

**Wilsonia canadensis.** Canadian Warbler. One bird taken August 26, 1914, in second-growth woodland, was the only time the species was met with. This individual had suffered some accident that had left a large portion of the crown with the skull exposed; but the general physical condition of the bird did not appear to have been affected.

**Setophaga ruticilla.** Redstart. Plentiful as a transient; less so as a summer visitant. Appeared by April 18; young fully feathered July 26; remained until September 21. During the nesting period, it was rarely found any distance from water.

**Mimus polyglottos polyglottos.** Mockingbird. Rather numerous resident about the base of the range; but decidedly uncommon in the higher parts. A single individual seen in dense growth bordering a stream at an altitude of 1900 feet on May 13, 1914.

**Dumetella carolinensis.** Catbird. I observed this species at irregular intervals between May 2 and October 3. Never more than four birds were seen in one day, and often weeks passed without any being noted. Was most frequently seen about the time cherries were ripening, upon which fruit it fed.

**Toxostoma rufum.** Brown Thrasher. Singularly enough, I met with the thrasher but once while in the Boston mountains. What appeared to be a stray transient was seen near the top of the range, September 30, 1913.

**Thryothorus ludovicianus ludovicianus.** Carolina Wren. Found in all kinds of situation, throughout the mountains, every month of the year. I think it raised three broods each year; the first was out by May 19. Adults began to molt heavily soon after the initial brood was launched.

**Thryomanes bewicki bewicki.** Bewick Wren. This wren appeared mostly during the migrations. It was decidedly uncommon during the summer months, but was frequent during the early part of October. In spring it arrived by March 27. As much of a brush haunting species as the following, but affecting more open situations.

**Troglodytes aedon parkmani.** Western House Wren. Uncommon; noted only as an autumnal transient, occurring between September 17 and December 8. Several were seen during each year I spent in the region.

**Nannus hiemalis hiemalis.** Winter Wren. Another species that was seldom observed. The few that were seen were confined to the roughest slopes of ravines. Present between November 7 and April 4.

**Certhia familiaris americana.** Brown Creeper. Appeared to be rather uncommon, except during a few days in early spring; however, it was irregularly present from October 2 on, throughout the winter. On April 7, 1914, a great number of Creepers passed through the region; three or four birds were seen on a single tree at once. They are able to walk head downward with almost the ease of a Nuthatch, when occasion requires.

**Sitta carolinensis carolinensis.** White-breasted Nuthatch. A fairly common resident; but its numbers were considerably increased in late autumn and



winter by individuals that had nested farther north. The young of the first brood appeared during the first week in June. During the nesting period adults were often seen creeping about the very roots of the trees.

**Baeolophus bicolor.** Tufted Titmouse. An abundant resident in the region; fully as numerous as the following species. Nidification commenced about April 20.

**Penthestes carolinensis carolinensis.** Carolina Chickadee. This and the preceding species were probably the most frequently observed birds in the higher parts of the range. The young of the first brood were able to leave the nest about May 20. A nest found in a stump in an open field contained four birds about ten days old. Two of them lacked the tarsi of the right foot; nevertheless they appeared as spry as the normal individuals.

**Regulus satrapa satrapa.** Golden-crowned Kinglet. Neither species of kinglet was present in winter; but this one was a rather common transient for brief periods, both in spring and fall. In the former season it was present from March 17 to 27; in autumn appearing October 28.

**Regulus calendula calendula.** Ruby-crowned Kinglet. Very abundant for considerable periods in autumn and spring. Arrives from the north by September 24, remaining until near December 1. Reappears in spring on April 5 and remains as long as the various fruit trees are in bloom. Farther north and east it is the warbler tribe that is associated with the apple blossom; here it was the Ruby-crowned Kinglet.

**Poliophtila caerulea caerulea.** Blue-gray Gnatcatcher. As a summer visitant the gnatcatcher was as numerous as in any region through which I have traveled. It was pretty evenly distributed throughout the mountains. Arrived by April 16, had fully feathered young July 24, and departed about September 16. Excepting during the nesting period, it was generally associating with titmice whenever seen.

**Hylocichla mustelina.** Wood Thrush. The few that remained to nest in the mountains were very localized in distribution, confining themselves to the underwood of a few very deep ravines. Arrived toward the middle of May, but rather tardy in completing the nest; found uncompleted sets of eggs far into July. Present until September 21. During September many birds had the plumage stained from contact with poke-berries.

**Hylocichla aliciae aliciae.** Gray-cheeked Thrush. Found to be a common transient during spring, but not seen in fall. Arrived with the following species, and for a few days equally as abundant. All had departed by May 11.

**Hylocichla ustulata swainsoni.** Olive-backed Thrush. An abundant spring, and a fairly common autumn, transient. Present from April 28 to May 25, and from September 7 to 18. Not as retiring a bird as the preceding.

**Hylocichla guttata pallasi.** Hermit Thrush. Fewer of this species were seen than of any other thrush recorded. Found between November 5 and January 10; rarely more than a single bird seen in a day.

**Planesticus migratorius migratorius.** Robin. Not known to have bred in the immediate vicinity; but I found Robins present, and apparently preparing to nest, while visiting Fayetteville, 23 miles north of Winslow, April 15, 1913. As a fall and spring transient it is very numerous, and a few winter. Began to arrive from the north October 1, and remained in spring until April 7.

**Sialia sialis sialis.** Bluebird. Common resident, but the numbers were greatly increased by winter visitants. Its principal food during the cold weather was sumac berries. Nidification began about March 25. Young and adults were both molting heavily as late as September 18.

*San Antonio, Texas, October 22, 1914.*

## FROM FIELD AND STUDY

**Barn Owls as the Farmer's Friends.**—On May 13, 1914, while staying for a short time at the Herminghaus Ranch near Mendota, Fresno County, California, I was informed that there were two nests of Monkey-faced Owls in the tank house, which is a large three-story affair built on a slight knoll a short distance from the house. Although the tank is still in place the building has been in disuse for several years.

Upon investigation I found that two pairs of Barn Owls (*Aluco pratincola*) had shared the structure with a colony of Cliff Swallows and a great number of bats. One nest was placed in the tank on the bones, fur, pellets, and refuse that had accumulated to a depth of several inches. One bird was perched on a beam overhead asleep, while his mate occupied the nest which contained four very small birds and six eggs. Scattered about on the floor were five Pocket Gophers (*Thomomys*), five Kangaroo Rats (*Perodipus*), one Pocket Mouse (*Perognathus*), and two white-footed mice (*Peromyscus*), all of which were in good condition and undoubtedly of the previous night's capture. Besides these, there were partly eaten remains and fresh skeletons of several more. All evidence pointed to the fact that this place had been used for a great many years by owls, as I picked up nearly four hundred entire pellets and could have secured many more.

The other nest was on the floor of the platform between the siding and tank in a rather exposed situation, and the nine eggs had been deserted for some time.

A second visit was made to the Herminghaus Ranch on July 19, and upon inquiry about the owls, I was informed that all of the ten eggs in the first mentioned nest had hatched and only one of the owlets failed to come to maturity. My informant also stated that early in June a second set, consisting of seven eggs, had been deposited and produced seven sturdy birds, the youngest of which was still present, being unwilling to attempt a long flight.

Aside from the late nesting dates, there was another fact that may have had some significance. Mr. Albert Foster, the superintendent of the ranch, realizes the great benefit that he derives from the presence of such efficient mammal destroyers about the place, and affords them protection at all times; but he informs me that a former tenant persistently shot all hawks and owls and destroyed their nests at every opportunity, and that on the Herminghaus Ranch, the Barn Owls were reduced almost to the point of extermination. Is it not possible that these nocturnal hunters, now safe from persecution, are depositing large sets of eggs in an effort to regain their normal abundance in that region?

If the thoughtless farmers who so relentlessly destroy this owl on account of its supposed fondness for chickens and pigeons would take the trouble to keep watch of a nest-site through one season, the most ignorant among them could hardly fail to realize that they are working against their own best interests whenever they kill a Barn Owl. Then, if we could convince sportsmen that all hawks and owls are not the ravenous destroyers of game birds that hunters generally suppose them to be, we would not be saddened by the all too frequent sight of the remains of numerous innocent Sparrow Hawks and Red-tails that are to be found on the ground beneath the telephone and power wires along so many of our country roads during the shooting season, and the plague-infested squirrels, of which we have heard so much in recent years, would cease to be a supposed menace to our health, or destroyers of the farmers' crops.—JOHN G. TYLER, *Fresno, California.*

**Two Birds New to California.**—*Hydranassa tricolor ruficollis*. While collecting January 17, 1914, at La Punta, located on the south end of San Diego Bay, I shot a Louisiana Heron. It proved to be an adult female.